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ABSTRACT

This module presents information to administrators and teachers planning to use telecommunications in the business and office curriculum in grades 9-12. It accompanies three modules designed for use in three courses in which a unit on telecommunications can be taught. The module addresses four major needs. The first section discusses required pieces of equipment/hardware: computer/monitor, modem, telephone line, and extras (second diskette drive, printer). The second section focuses on the required materials, including terminal software, diskettes, and paper. The third section provides brief descriptions of the major data information sources currently available--Dialog, CompuServe, and the Source. A brief section deals with private electronic bulletin boards and their advantages and disadvantages. The fourth section discusses the depth of educator involvement in the electronic information era. Recommendations are made as to selection of computers and software. (YLB)

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TALK

Telecommunication Aids in Learning the Keys

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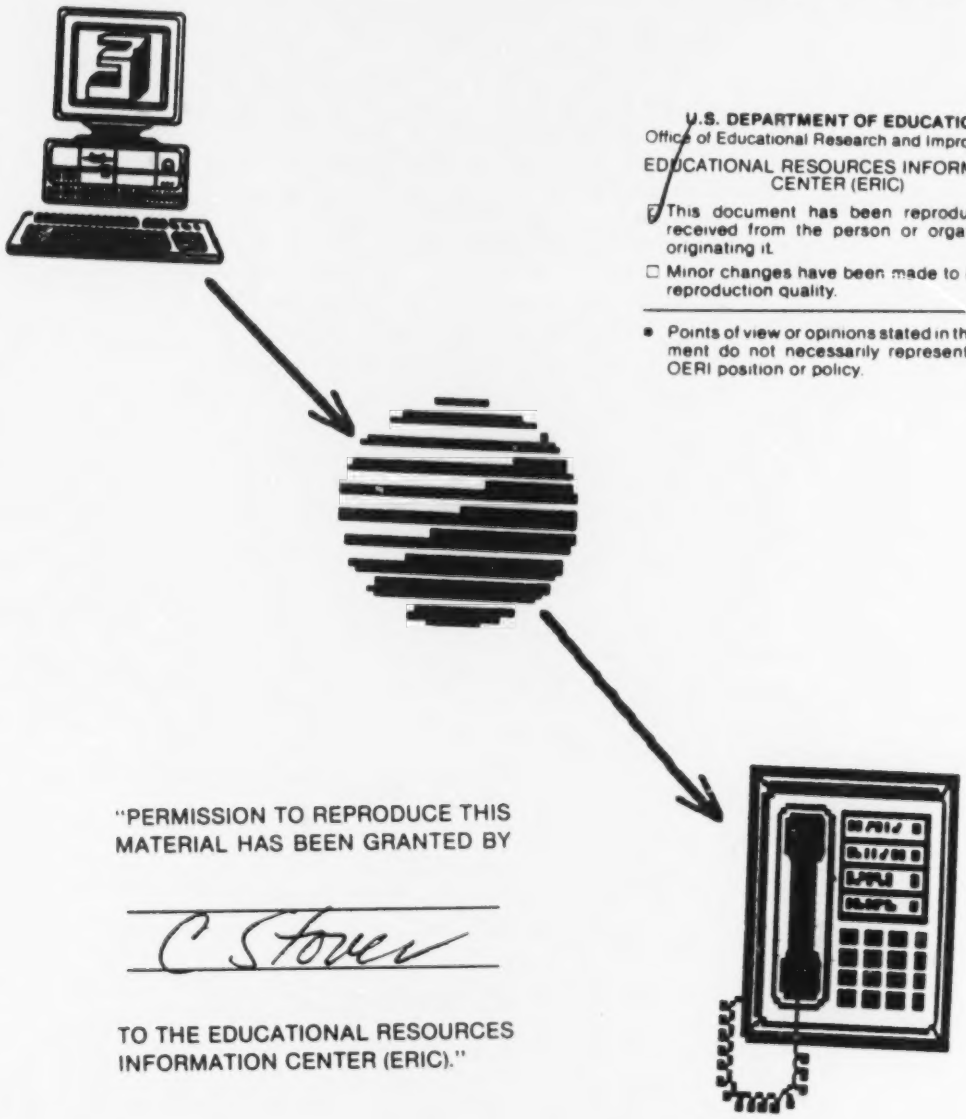

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CE 052 281

Module I: Administrator & Teacher Decision Module

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Objective: To present information to the administrators and teachers planning to use telecommunications in the Business and Office Curriculum in grades 9-12.

Introduction

Today any administrator with responsibilty for preparing the office worker of tomorrow is totally at loss unless there is a presentation of the electronic methods of communication. The purpose of this module is to present information in a simple manner so that the administrator can be informed relative to the technologies involved in electronic communications.

There will be four major needs addressed in this module. Number one will be the required hardware; number two will be the required materials; number three will address the available information services; and finally a section will be presented on the depth of involvement in the electronic information era. In addition to the general information presented, there will be a discussion of the most common types of hardware that an administrator or teacher is likely to have or to purchase.

Equipment

There are three pieces of equipment which must be had. These required pieces will be discussed and then the pieces which would be nice to have will be mentioned.

Computer/monitor

First on the mandatory equipment list is the computer and monitor. The computer required must have a minimum of 64K of memory and a diskette drive. In the classroom environment, there are two primary computers — Apple™ and IBM ™ and compatibles of each. Some LEAs in North Carolina made an investment in TRS-80 computers several years ago and several systems have labs of the TRS-80 Model III and Model IV machines. Other than to say that these machines are capable of telecommunication, they will not be discussed in this document. The prime reason for this is that the business community seems not to utilize these computers to any great extent.

The business community has also made little use of the Apple™ family computers except for the Macintosh. The reason for their inclusion is the widespread distribution of the Apple computer in all areas of instructional use in the public schools of the state.

IBM™ and its compatibles are the business choice for office computers. There are a number of compatibles which have made headway in the battle with the true IBM machine; the one which will be discussed in this module will be the Tandy™ machine. This machine is an outgrowth of the TRS-80 machine and is a full-fledged and excellent machine.

Apple machines with the designation of the TWO family of computers

are those most widely distributed. They all will have the requisite memory (except possibly][+ machines--48K was standard). Other members of this family are designated //e, //c, and //gs.

The Apple Macintosh family of computers is fairly widely distributed in the business environment and is becoming more so. Unfortunately, few public schools have utilized the Macintosh in the classroom environment. Because of the lack of school use there will be no discussion of the Macintosh in this module.

In addition to the computer and the required diskette drive, a monitor is needed. Most computers will have a monochrome monitor as standard but a surprising number of business and school applications are using the color monitor. Any monitor is appropriate as long as it can dispaly 80 columns of data in an easily read format.

Modem

A modem is a piece of equipment which takes computer output which is a series of digital signals and converts the digital output to analog signals which can be transmitted over telephone lines. The modem serves both in the transmission and receiving of data.

There are three primary types of modems. One is called the acoustic coupler. This modem is connected to the computer but there is no connection to the telephone systerm. Rather a device with two rubber cups to hold the telephone receiver provides means of transmitting and receiving. While this is an easy method to connect, the disadvantage is that sometimes room noise gets into the system. Another potential problem is that the cups are designed to hold the traditional receiver not the newer modular types.

The second type of modem is termed internal. The internal modem connects within the computer and has only a wire which connects to the telephone system (*any connection to telephone equipment must be reported according to instructions in the local company directory).* The connection is into an RJ11 jack (commonly called a modular plug). The advantage is that there is no external box or acoustic coupler to carry around. The disadvantage is that the modem takes up room within the computer and causes a greater power use within the computer.

The final type is the external modem. This is probably the most common type of modem. It has a cable from an output port on the computer (RS232-type) to an external box which is then connected to the telephone system. The disadvantage is the cumbersome nature of the external box. The advantage is that the same port connecting the modem can be used for many other applications.

Modems of any of the types mentioned above also have a speed of transmission. Transmission speed is measured in something called baud rate. The higher the number the more information that is transmitted over a given time. The more common baud rates are 300 and 1200; it is not unusual for 110 and 2400 rates to be seen. The higher numbers generally will run the lower numbers as well. The highest number one can afford is generally the best. There could be some problem with the

2400 baud modem on telephone lines which have a lot of static; since the transmission rate is fairly fast any disturbance could cause data loss. If a toll call is necessary to reach one of the telecommunications services, the slightly higher cost of the faster modem can be made up in long distance toll savings.

Telephone Line

The telephone line is necessary for the connection to be made from the microcomputer to one of the information services. Whether a dedicated line is needed or not will have to be up to the amount of use that is planned. If the use is intermittent or of short duration then the dedicated line will not be needed. If the teaching is planned for an extended period of time or if many different students will be moved through the curriculum then a line dedicated to the telecommunications might be a good investment. The local telephone company or other vendor will need to provide an RJ11 jack for the connection of the modem. If a telephone line can carry normal conversation, there should be little problem with either 300 or 1200 baud modems.

Extras

In addition to the items mentioned as required, there are two other items which help in telecommunication. One of these items is an additional diskette drive and the other is a printer.

The second diskette drive allows the user a greater latitude in both data storage and data manipulation. The second drive adds a minimum of 140K; if the second drive is a hard disk, 10,000 to 20,000K is easily possible.

The printer is necessary if a paper copy of the information retrieved is needed. In business use, a printer is considered a necessity and it could be argued as a necessity for the school room as well. Printers come in a variety of forms — from thermal to dot matrix to daisy wheel and laser types. The most common and most useful printer type is the dot matrix.

Materials

The required materials for use in telecommunication are only some form of communications or terminal software (program) and some blank diskettes for storing received data. An option of computer paper for making paper copies is useful if a printer is available.

Terminal Software

The purpose of using a program to accomplish the connection of the microcomputer to an information service is for simplification and speed of connection. Most of the programs available allow for automatic log-on (check in) to the information service. Many also allow a rapid perusal of new additions and allow the program to go directly to the appropriate reference within the service.

Terminal software is available from a number of vendors, modern manufacturers, and even free (or nearly so) from user groups. An excellent terminal program for the MS-DOS computers called ProComm™ is available as shareware. Shareware is a distribution method for quality software. The user is allowed a free copy to try; if the program is useful then the user remits a modest sum to the producer of the program to register the copy. This is an excellent way to *try before you buy.*

Diskettes

When getting diskettes, it is important to keep in mind that the value of the diskette is not the true cost of the diskette but the value of the data stored on it. State contract diskettes are appropriate for most school uses since generally the data would not be irreplaceable. Diskettes for microcomputers come in a variety of formats and sizes from single-sided, single-density to double-sided, double-density — from 5.25" to 3.5". The specific format and size would need to be compatible with the particular computer used. The owner's manual will be a valuable resource.

Paper

Computer paper must be bought to be compatible with the particular printer used. Some printers will use the thermal paper, others will use pin-feed paper, and still others will use single sheets. Sizes which can be used will vary with the computer from 8.5" x 11" to 11" x 14". Use the paper recommended by the printer manufacturer. Paper comes in different weights. Generally speaking, buy the mid-range of paper weight that the printer is capable of handling. An extremely light paper causes paper jams and an extremely heavy paper will sometimes cause incomplete printing.

Information Service

Once the equipment and materials are in place then perhaps the biggest decision of all must be made . . . which data information service should be used. Each of the ones have pros and cons. Following will be a brief description of the major services currently available. This list is not meant to be inclusive; it covers only those major services which have been in existence for a period of time. In addition to the major services a brief section will deal with private electronic bulletin boards and their advantages and dangers.

The following information concerning the databases was taken from the advertising materials from each of the vendors.

Dialog ®

This service is probably the most comprehensive of all the services in the number of different research databases which are offered. As of January 1987 there were more than 280 different databases offered containing in excess of 120 million records. Dialog has been available since 1972. Dialog databases offer subject coverage in science, business, technology, chemistry, law, medicine, engineering, social sciences, economics, and current events. Dialog is available 24 hours every week day and is also available on the weekends. Also offered is a CD ROM option of the information on compact disk for those databases often accessed. Also available is electronic mail allowing one to send and receive information to and from other researchers across the world.

The Dialog® Information Service has a **Classroom Instruction Program** which allows access to most databases at the rate of $15/connect hour. A call to the marketing department can get one started on the Classroom Instruction (1-800-3-DIALOG). At the present time, those signing up for the classroom program are given two free training sessions on the proper use of the Dialog® . These sessions normally cost $125 each.

In order to connect to Dialog all that is necessary is to call either directly via DIALNET™, TELENET™, TYMNET™, or INWATS™. Costs will vary depending on where one is located and where the nearest access network is located.

CompuServe®

CompuServe® has been supplying information to Fortune 500 companies since 1969. Currently the service goes beyond that of business clients and is being used by a nation of computer aware people to access a variety of information. Using CompuServe® it is possible to do on line communications — through electronic mail, conferencing, and bulletin boards. It is also possible to participate in electronic forums concerning both software and hardware. From Apple to Zenith and from Lotus™ to Word™ — all are possible in the personal computing support section. It is also possible to get up to the minute news, weather, and sports . . . *Associated Press, Business Wire*, National Weather Service reports. The Electronic Mall™, home banking, discount broker service, and mutual fund accounts can all be used via CompuServe® . Other services include travel planning; flight reservations; games; entertainment news; hobby forums; home, health, and family items; money matters and markets; on line encyclopedia and other reference matter. The wealth of information which can be gotten is immense.

There is a one time sign on cost and a connect fee. The connect fee varies with the time of day. During the day or prime time (8 a.m. - 6 p.m. weekdays) the cost is $12.50/hr for 300 baud and $15.00/hr for 1200 baud. In addition there is a network access charge of $0.25/hr for the CompuServe Network® and $10.00/hr for TYMNET™ and TELENET™ access. Certain items on the service require additional charges -- for example encyclopedia use. Additional information can

be obtained by calling 1-800-848-8199. CompuServe is located in Columbus, OH.

The SOURCE™

The SOURCE™ is another all purpose information service offering the same type of information that was listed on CompuServe® . The connect charges on this network are higher than for the CompuServe. Prime time is 7 a.m. - 6 p.m. weekdays. The rates are 330 baud - $21.60/hr and at 1200 baud the cost is $25.80/hr. There are free online tutorial segments which help the user become familiar with their service. In addition, there is a toll free customer support line.

The Source™ is located in McLean, VA; the toll free number is 1-800-336-3366.

Other Services

There are many new services which are beginning to make their way onto the telecommunication scene. Most of them do the same type of things which the three mentioned above do. One of them, the Dow Jones™, has a specific student module written for it. The Genie Service from General Electric is widely advertised in microcomputer magazines; Tri-Net™ is an office based information service (1-800-FOR-DATA); Einstein™ is a group of 90 on line databases chosen for school use. Einstein™ is owned by Addison-Wesley Publishing Company ... (1-800-227-1936).

A number of private bulletin boards have sprung up across the country and they offer a wealth of information. As with any individual business venture, some of them are quite good and others are not so good. A listing of the various numbers can be found on the CompuServe® and The SOURCE™ networks. The adage *caveat emptor* - let the buyer beware - holds in this realm.

Depth of Involvement

The depth to which the system should go in the telecommunications area is up to the local administration. There are several levels of involvement possible for the person interested in the computer communications area. One area is in the area of plain research -- this could be simply used for news retrieval; stock assessment; topical investigations. Another area lies in the electronic mail aspect. This allows the sending and receiving of information much as is accomplished with a paper letter. A major difference is that the same letter can be sent to a number of locations at the same time with just the push of a few buttons. Mail can be sent and received at any time giving this method of transmission an advantage over the paper methods. A third level of involvement is through the use of electronic messaging -- sometimes called electronic bulletin boards. A general announcement can be posted and all those interested can read and reply to a posted notice. This also has

a wide range of distribution but one cannot be sure who is reading the message. A final method is widely used in some business applications -- the exchange of data between workers or work locations. This data can be anything from sales figures to confidential personnel reports.

Recommendations

There are several recommendations which can be made as to configuration. They will be made in the following table.

Computer

Apple Computer
- Apple //e or //c-dual drives
- Apple 1200 modem
- Imagewriter printer

IBM Computer
- either PS/2 or portable
- IBM 1200 baud modem
- ProPrinter II

Tandy Computer
- either 1000 or 3000 series or 1400 LT portable
- Tandy 1200 or 300 modem
- Tandy or similar printer

Software

Apple
- AppleTerm
- ASCII Express Pro

IBM & Tandy
- ProComm

There is no one perfect solution to the telecommunication program but by carefully considering all the information presented in this module for administrators/teachers a quality decision can probably be made concerning the selection of hardware and software. If pieces of equipment are already in place, consulting a computer salesperson would probably be the best bet to make sure that all the pieces are compatible.